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THE PROSTHETIC TESTING AND DEVELOPMENT LABORATORY PRESENTED AT THE SURGICAL SESSION ON JUNE 16, 1948

on: The Suction Socket Prosthesis for the Unilateral)

. . . . . one hundred and four (104) amputees volunteered in the current testing projects. Careful screening eliminated sixteen (16) subjects for physical, psychological, or external reasons.

Unfavorable condition of the stump was responsible for the rejection of ten (10) cases; seven (7) of which had extensive bone-adherent scars, one (1) an osteomyelitic sinus with drainage, while the two (2) remaining cases showed high capillary fragility. Three (3) were rejected for poor condition of the fellow leg, and one (1) for reason of severely impaired general health.

To this date fifty-one (51) amputees have been successfully fitted with suction socket prostheses and twenty-five (25) are in various phases of the fitting period. (This does not include amputees being fitted at this Suction Socket School).

Of these not a single case had to permanently discontinue the use of the suction socket for reasons of ill effects upon the stump or any other damage refersble to the suction socket.

Four (4) of these subjects have worn suction socket prostheses exclusively for a period of over one year.

The above-mentioned 104 volunteers do not represent a cross-section of the average population, but were all male individuals and, with very few exceptions, veterans of World War II. Their vocation is chiefly urban.

With the exception of one (1), all amputations were the results of combat injuries. One amputation was done because of malignancy (synovioma), and in no case was a peripheral vascular disease or systemic pathology the cause of the amputation.

Of the seven (7) cases rejected for stump conditions, three (3) were over 50 years old and specimens of poor surgery and omitted aftercare. (Veterans

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of World War I).

There has been no permanent damage, and only minor transitory ill effects on the stump referable to the suction socket.

In no case have bone spurs at the end of the stump been found a factor of disturbance, and there have been quite fanciful ones to deal with. Bone spurs, as a rule, are no match for expert fitting.

A number of the sockets have been equipped with some kind of light safety belt. In most cases this belt is discarded almost immediately. Only one amputee, with short stump (5"), continues its use. We believe that the use of a light safety belt is recommendable for a short stump.

Comparative studies of circumferential stump changes have shown a reduction of up to three inches in three cases where suction socket has been in use for more than one year.

In no case has a permanent increase in stump circumference been noted.

MATERIAL: Based on the experience gained in the first part of this program and under compulsion of providing a large number of suction socket users which are required for various other experimental projects (testing different designs of hydraulic legs) no delaying experiments with laminated plastic, aluminum or other material have been undertaken, and wood has been the exclusive material used in the construction of all sockets. The other parts such as knee, shank, ankle and foot piece are likewise totally made of wood.

VALVES: With the exception of three cases all sockets have been equipped with either the Northrop Valve (automatic expulsion, manual inlet of air) or Catranis "Breathing Type" valve (automatic expulsion and inlet). Both types have afforded satisfactory maintenance of the required pressure differential, and no undue leakage or corrosion has been noted. Three amputtes on suction socket since the start of this program at the Prosthetic Testing and Development Laboratory have been using the original plug type valve (manual intake) over more than one year with no trouble encountered as regarding material and function.

DURATION OF FITTING PERIOD: On the average four to five weeks are required, the availability of the amputee constituting an uncontrollable and most uncertain factor. As a rule, three fittings are scheduled until finished product is issued.

. . . . . The prosthetic-orthopedic unit of the Prosthetic Testing and Development Laboratory has been engaged for well over a year in the continued program of suction socket prosthesis. Our experiences are so far favoring those who advocate the suction socket as a safe, comfortable prosthetic device providing that adequate (certified) orthopedic-prosthetic screening and management is secured.

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